



# AN INTRODUCTION TO GOVERNMENT TECHNICAL EVALUATIONS— A CONTRACTING OFFICER'S PERSPECTIVE

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Technical Evaluations by the program office are the foundation for negotiating a fair and reasonable modification to a sole-source contract. A primer for writing a solid, comprehensive, complete, and accurate technical evaluation with detailed analysis is presented in this article.

**T**he technical evaluation of the contractor's proposal directly affects the outcome of the negotiation stage of the acquisition process. In my experience as a contracting officer, technical evaluations have been sorely lacking in content and credibility. This may be due to a lack of experienced personnel or availability of historical data. Regardless of the specific reasons, I believe it is truly time for us to focus, as a single acquisition community, on the technical evaluation of the contractor's proposal, and use this information wisely to realize the benefits of the services and supplies the government acquires daily.

The Federal Acquisition Regulation (FAR) requires that each contractor's proposal be analyzed in order to assure that the price being paid by the government for goods or services is fair and reasonable. The FAR 15.404-1(e) defines *technical analysis* as follows: "(1) The contracting officer may request that personnel having specialized knowledge, skills, experience, or capability in engineering, science, or management perform a technical analysis of the proposed types and quantities of materials, labor, processes, special tooling, facilities, the reasonableness of scrap and spoilage, and other associated factors set forth in the proposal(s) in order to determine the need for and reasonableness of the proposed resources, assuming reasonable economy

and efficiency. (2) At a minimum, the technical analysis should examine the types and quantities of material proposed and the need for the types and quantities of labor hours and the labor mix. Any other data that may be pertinent to an assessment of the offeror's ability to accomplish the technical requirements or to the cost or price analysis of the service or product being proposed should also be included in the analysis."

## THE TECHNICAL EVALUATION

The purpose of the technical evaluation is to determine whether the contractor's proposed expenditure of labor and resources relates to the performance promises and schedule objectives of the contract. The technical evaluation addresses the quantitative and qualitative aspects of the proposed direct charges to include direct labor, materials, subcontracts, interdivisional work, computer usage, travel, and other direct costs. The technical evaluation is the assessment of the proposed effort to accomplish the contract requirements specified in the Request for Proposal (RFP). The technical evaluation is not an evaluation of the dollar amounts but rather a technical analysis of the rationale, estimates, and information behind the dollar amounts. In the sole-source environment, the technical assessment supplements a cost analysis of the specific cost elements and tasks. The Defense Contract Audit Agency (DCAA), Defense Contract Management Agency (DCMA), or the Program's cost and price analyst usually performs the cost analysis in accordance with FAR 15.404-1(a)(5), which states: "The contracting officer may request the advice and assistance of other experts to ensure that an appropriate analysis is performed." The division of labor is usually divided between the field organization (DCMA/DCAA) and the program office. The program office personnel usually look at engineering labor hours, as well as material quantities, subcontract labor, travel, and other direct costs, while DCMA looks at labor hours for testing, production, tooling, quality control, and planning. DCAA reviews any subcontracts, materials, other direct costs, and rates and factors for the proposal.

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***The technical evaluation is the assessment of the proposed effort to accomplish the contract requirements specified in the RFP.***

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The basic rule for determining the need for a technical evaluation by the program officer is when cost or pricing data are required. Completeness and accuracy of the technical evaluation are necessary to prepare the government's negotiation position. While the contract negotiator and price analyst prepare the negotiating position, the program office will participate in all clearance briefings to support the findings of the technical

evaluation, which supports the government's position in the event of disputes or defective-pricing allegations.

The technical evaluation provides the program office the opportunity to verify the contractor's understanding of the government's technical requirements. The technical evaluation is relied upon for assessing the risk of meeting the performance parameters established by the government. The technical evaluator is accountable for documenting measurable assessments to the realism of the contractor's proposed labor and material budgets.

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Upon receipt of the contractor's proposal, the program's technical evaluator performs a preliminary review of the proposal to ensure the following recommended compliances are met:

1. The overall technical proposal is adequate and addresses scope, deliveries, and schedules required by the RFP.
2. The contractor's technical approach in the proposal is based upon sound engineering concepts.
3. The contractor provides adequate information to support specific quantities of labor and materials.
4. The contractor's proposal contains an adequate description of its basis for direct labor hours, including sufficient rationale for engineering judgment and projections from prior work completed on similar programs.
5. The contractor provides adequate explanation for factored labor hours.
6. The contractor's proposal provides supporting data to justify proposed material, scrap, rework, attrition, or other factors.
7. The contractor provides reasonable rationale for special tooling and test equipment to establish that the proposed items are required for the program.

Factors that should also be noted in the technical evaluation include the complexity of the project and associated risks of satisfactory technical performance, the contractor's proposed manloading, the accounting and estimating methodology, relevant technical and management experience levels, and the contractor's judgment on technical issues.

The failure to provide a comprehensive technical analysis of a contractor's proposal can seriously delay the award of the contract action, impede an effective price analysis, extend negotiations, and result in difficulties during contract performance. Therefore, it is essential that the technical engineer be specific in analyzing the contents of the contractor's proposal so the technical evaluation is consistent, complete, and accurate to withstand contractor scrutiny.

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During negotiations, it will be the contractor's responsibility to question the technical evaluation and the engineering judgment used in the technical evaluation, the methodology of the technical analysis, and challenge the conclusion of the technical assessment. Without solid, measurable, and insightful substantiation, the technical evaluation becomes the weak link in the negotiation process. However, the technical evaluation can be difficult to substantiate because of inexperienced evaluators with irrelevant engineering experience, time constraints, and no easily accessible historical data to substantiate current estimates. Fortunately, there are five key elements for a successful technical evaluation to assist the evaluator in the assessment: (1) organization, (2) preparation, (3) communication, (4) focus and (5) consolidation of the various elements into a cohesive technical analysis that is useful during negotiations.

## **ORGANIZATION OF THE TECHNICAL EVALUATION**

The organization of the technical evaluation must be parallel with the contractor's technical proposal for ease of understanding the differences between the parties and preserving the task segregation for labor and material. This aspect is important because of the differences with rates and factors in the proposal. By keeping a strict adherence to organization of the technical assessment consistent with the contractor's proposal, the technical evaluation will assist the price analyst and negotiator in establishing a reasonable position, based on factual, measurable, and easily recognizable differences in the contractor's proposal and the technical assessment.

The technical evaluator must provide quantitative, value-added, recommendations, and rationale for all exceptions. The use of general terms such as *too high* or *too low* is not adequate without supporting rationale.

A primer for organizing a technical evaluation consists of starting with a summary paragraph briefly describing the work proposed and any unique aspects to the contractor's proposal. The technical evaluation should then summarize the proposed hours with clarity, traceability, and completeness. An explanation for all disallowed hours or recommended reductions should reference the proposal documentation. The technical evaluation should document any agreements on tasks or costs as a result of fact-finding. Finally, the technical evaluation should conclude with recommendations and direct traceability to the task sheets.

## PREPARATION FOR WRITING A TECHNICAL EVALUATION

The basis for understanding and producing a cohesive technical evaluation is: (a) reading and understanding the Statement of Work (SOW) and the contractor's cost and technical proposal, (b) reviewing the scope of the tasks proposed by the contractor, (c) reviewing the contractor's estimating methodologies and rationale, (d) evaluating the detailed estimates, calculations, and factor applications used in the contractor's proposal, and (e) formulating a technical analysis plan after evaluating all the detailed estimates.

To understand the proposal, the technical engineer must know the requirements, which are precisely written in the SOW. The most common reasons for inadequate technical evaluations are the lack of technical understanding by the evaluator of the key issues of the proposal and not understanding the government's requirements. Therefore, it is vital that there are valid government requirements for the contractor's proposal. In many cases, the requirements have not been determined and the basis for fact-finding has been the determination of a valid government requirement for the acquisition. Any changes to the SOW due to revision of the technical requirements must be provided to the contracting officer for incorporation into the final contract documents.

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The technical evaluation should also address any open technical issues that still need to be resolved during further discussions. The technical evaluator should comment on the reasonableness of the proposed material, including such factors as the kind, quantities, and necessity of purchasing such material for the project, while the DCAA auditor evaluates the rates and quotes for the material. Similarly, for labor assessments, the technical evaluator should evaluate the types, quantities, and skill mixes of labor hours proposed by the contractor, and provide a detailed estimate of the necessary labor hours and mix, as well

as the rationale for differences with the contractor's estimate to accomplish the proposed work. Finally, to formulate a comprehensive technical analysis plan, the evaluator will prioritize tasks and look for common threads in the proposal for consistency of purpose and understanding. Once the requirements are known, the cost proposal is fully understood and the technical analysis plan for evaluation is set and can proceed to the next important element—communication.

## COMMUNICATION IN WRITING TECHNICAL EVALUATION

If additional information is required to understand the contractor's cost and technical proposal, the program's technical evaluator should contact the contracting officer to request better insight into the contractor's proposal. As a result, a series of fact-finding meetings may be necessary to resolve any issues and gain a full understanding of what the contractor is proposing for the contract. Fact-finding usually consists of a multidisciplinary team, jointly led by the buyer and project officer, reconciling the assumptions, facts, and judgments associated with the contractor's proposal, and gaining further insight to the preparation and examination of the proposal. It is important to have multidisciplinary buy-in from all functionals in the program office for the fact-finding meetings. These meetings should be arranged early in the process so as not to impact the overall acquisition schedule, and should focus on gaining insight into the rationale behind the contractor's proposed effort.

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It is not fair to the contractor to evaluate a task without knowing the facts behind the estimate. However, the government has a right to know the structure of each task and the methodology associated with the task. The key element in fact-finding is understanding how to communicate and investigate the methodology of the proposal. As a result of fact-finding, the contractor may submit a revised proposal. The revision may result in the need for a secondary technical evaluation, which would include an assessment of the revised proposal. If there are clarifications of ground rules or assumptions required from the contractor during fact-finding, the technical assessment should explain any assumptions made in the technical evaluation of the proposal, based on the clarifications provided by the contractor.

## FOCUS TECHNICAL EVALUATION TO MAXIMIZE THE EVALUATION INVESTMENT

The technical evaluation must be an independent document during negotiations, substantiating the government's position for exceptions to the contractor's proposal. The

focus of the technical assessment should be to substantiate the contractor's proposal or the exceptions thereto. The project office should discuss any divergences in the government estimate in terms of hours, skills or materials. It is important for the technical evaluation to answer the question: What is the basis for the difference? By answering this question, the evaluation is substantiated in fact. The evaluation should also explain why the difference is applicable for the government to adopt this position. Without clear rationale the contractor will question the authority of the technical evaluation during negotiations. Finally, the technical evaluation should clearly explain the impacts of accepting the proposed or government recommended hours, skills or materials in terms of program risk, cost or schedule impacts as well as any oversight necessary to sustain the proposed effort.

## **CONSOLIDATION OF THE ELEMENTS FOR THE TECHNICAL EVALUATION**

The technical evaluation should be summarized to the level of detail commensurate with the proposal structure, coordinated within the program office and with the price analyst, with the objective of assisting the contract negotiator in establishing a reasonable position for negotiations. The technical evaluation should contain evaluation sheets of all separately identified technical and administrative tasks, line items, and milestones. The evaluation sheets should detail (a) the basis of the contractor's estimate, (b) the basis of the government's objective position, and (c) the basis of the government's initial position.

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The technical evaluation must be clear and show the reference page in the proposal, the cost element, the proposed amount, the recommended position, and the explanation for the recommendation or exception. A summary, per element, can be included to assist the government price analyst and contract negotiator in formulating a negotiating position. The rationale will provide arguments to support the recommended position by using such methods as comparison with similar proposals, catalog or market-price information, established industry standards, engineering judgment, or any other supportable methodology. This is the key for the technical evaluator because without a focus on traceability and concise evaluation support, the technical evaluation will need numerous revisions before it can be considered adequate, by the contracting officer, for establishing a negotiating position.



### Technical Evaluation of Brand X Space Systems Division Proposal XX-5542

Box 36A Security Upgrade Support

1. Introduction: This proposal is in response to RFP A293-001, dated 10 February 93. The proposal provides for technical and drawing support of the contractor during the installation of physical and visual security hardware.
2. A complete evaluation of the proposal has been made and is documented in the following format:
  - (a) background, (b) approach, (c) evaluation of direct labor hours, and (d) proposal summary.

Task 2: Project Coordination: This task provides Brand X program office support to this program office over the entire effort. The proposed 279 hours assumes a flat rate of 0.2 head for 9 months at 155 hours a month. The evaluation is task-based on the following estimates:

Estimate nine monthly program reviews at 4 hours + 2 hours' preparation = 46 hrs

Estimate 12 weekly telecons during construction at 2 hours' + 2 hours coordination and preparation = 48 hrs

Estimate action item close out at 3 hours per week = 108 hrs

Estimate Brand X program office support of 2 Brand X interim reviews at 4 hours = 8 hrs

Total program office support = 210 hours (46 + 48 + 108 + 8)

Note that this program recently changed from a monthly to a quarterly review. A minimum position would reflect a project status once a quarter (i.e., 18 hours versus 46 hours).

Recommend a minimum position of 182 hours and a target of 210 hours.<sup>1</sup>

### FIGURE 1.

### TECHNICAL EVALUATION OF BRAND X SPACE SYSTEMS DIVISION PROPOSAL XX-5542

## WRITING A TECHNICAL EVALUATION

The above discussion sets the stage for examining how to write a technical evaluation. The technical evaluation is written by the program's lead evaluator and reviewed by the program office's division-level engineer. The division-level engineer signs a cover letter to the contracting officer certifying the completeness and accuracy of the technical evaluation. Accountability lies with the program office to write a concise technical evaluation that assesses the contractor's proposed performance, schedule, and cost. Figure 1 gives an example of a well-prepared technical evaluation.

## COMMON EVALUATION METHODOLOGIES

Writing technical evaluations involves a review of the contractor's methodologies and rationale. A contractor's methodology is based on method or logic used to develop the proposed hours. The rationale allows the technical engineer to understand the methodology the contractor used for developing a certain position. The contractor's methodology and rationale may consist of averages, cost-estimating relationships, manpower analysis, skill mixes, manloading estimates, judgmental estimates, and unsupported estimates, if not already covered in the audit report or price-analysis report. The technical evaluator needs to understand the following government perspective:

**Averages.** The use of an *average* by the contractor sounds reasonable but may not be appropriate in all circumstances. Is the average based on similar elements? The data must be checked for accuracy and completeness, and variations in the data points. A trend analysis may also be appropriate when reviewing averages. Is the proposed effort consistent with the trend analysis? The bottom line for the evaluator is to consider that the government is concerned with the specific effort, not with an average number of labor hours.

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**Cost Estimating Relationships.** The contractor's use of valid metrics or cost estimating relationships is usual and customary. The evaluator must ensure that a logical cause-and-effect relationship is established between the variables based on reliable and historical data, preferably actual work performed by the contractor. The evaluator working with the DCAA, in most cases, should examine the methodology and currency of the data, as well as the reliability of the data for the proposed effort. When evaluating metrics or estimating relationships, the evaluator should be aware of the use of any old metrics and their validity to the current proposal. Conversely, the evaluator should be aware of the use of newly established metrics and the ability to verify the data for the program. In addition, there are adjusted metrics that need to be defined and determined reasonable for the task, as well as tasks bid separately where actual work performed by the contractor that produced the metric may have been included in the task. The bottom line for the evaluator to consider when evaluating estimating relationships is that there is a clear need for any cost-estimating relationships to eliminate any exposure to added hours from a cost-estimating relationship.

**Manpower Analysis.** When evaluating a manpower analysis for an effort over time, there should be a simple test of reasonableness because sometimes the sum of the parts is greater than the whole should be for the task. An example is XYZ program with a 24-month period of performance. The proposal is as follows:

Basis of Estimate (BOE):

182,500 hours proposed over 150 hours per month for 24 months.

Rationale:

The manpower analysis is 1,217 man-months over 24 months.

The question for the evaluator: Does this equal the estimate of 51 equivalent full-time people for the life of the program? The evaluator should consider "Can I really envision 51 people working full time on this, and only this, program for 24 months?"<sup>2</sup>

Manpower analysis, as with other estimates, uses statistics to establish reasonableness for the proposed tasks. The bottom line is to ensure the methodology and statistical analysis are reasonable for the proposed task.

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**Skill Mix.** During the initial evaluation of the proposal, the evaluator assesses the skill mix for the labor hours. The evaluator must be confident that the skill mix is appropriate for the tasks proposed. The contractor may bid higher skill levels than needed to do the job, and inexperienced evaluators do not understand that just because the contractor proposes senior people does not mean senior people will be used during contract performance. The contractor can use whomever it chooses once on contract. The evaluator should consider and understand whether the proposed skill mix is comparable with the plant-wide skill mix. If the contractor proposed a higher skill mix, it is incumbent upon the evaluator to understand whether this proposal is more complex than most other work in the plant. These considerations should be asked during fact-finding to assist the evaluator in establishing a fair skill mix for the proposed effort.

**Manloading Estimates.** These estimates are very common in most large corporations' proposals and are usually poorly supported. Manloading estimates are those hours used for *monitoring, coordinating, interface, support, or perhaps problem resolution*. These are the tasks that are half-time or indirect estimates of labor hours using statistics for justification. The evaluator must encourage the contractor to be more specific for the government to accept such manloading estimates.

**Judgmental Estimates.** These estimates are based on the experience base of the estimator. There are professional judgments, engineering judgments, judgments based on experience or other such ambiguous adjustments. The evaluator is searching for an adequate basis for the estimate. The contractor should fully explain how the judgment resulted in the hours proposed and the underlining assumptions inherent in the estimate. The evaluator should make the contractor quantify with specifics, the experience relied upon to

make the judgment. The same holds true when the evaluator, in a technical evaluation, determines a government position based on engineering judgment. The same questions apply, and the contracting officer or government price analyst will request more specifics before establishing a government position based on judgment. There must be some logical explanation for establishing a position using judgment.

**Unsupported Estimates.** The contractor must support all estimates with specific rationale for the hours to be valid. The above discussion has reviewed estimating techniques for supporting estimates. When a proposal is submitted there may be some estimates that are not supported. The contractor should be given the opportunity to show support for the effort. The technical evaluation should only substantially reduce a task if it is not a valid task. The contractor should agree that it is not a valid task, or the decision may be that the SOW needs to reduce the scope for that task since the task is not valid to the proposed effort. Also, if a task is duplicated by another task bid elsewhere in the proposal, the duplication should be eliminated, and agreed to, during fact-finding and not during negotiations. If the government's position deletes a task and only informs the contractor during negotiations, that tells the government's contracting officer that the evaluator did not accomplish a comprehensive fact-finding and communicate the government's position clearly. It also tells the government's contracting officer that the evaluator did not ask for substantiation or confirmation from the contractor as to the validity of the task.

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An open and honest dialogue is needed to understand the contractor's position and discover the correct estimate, or task, for the proposed effort. The technical engineer is accountable to ensure the government's position is adequately communicated to the contractor and reasonable steps have been taken to reduce any perceived inconsistencies in the contractor's proposal.

## THE TECHNICAL EVALUATION DURING NEGOTIATIONS

Negotiations may be part of any major acquisition action, but they are a mandatory feature of a sole-source environment. The relationship of the buyer and the seller is usually adversarial, with the contractor defending the proposal estimate being evaluated in the technical evaluation. The contractor will defend the estimate by questioning your judgment, your intelligence, and your conclusions in the technical evaluation—questioning the technical evaluation elements should have already been accomplished during fact-finding so the conclusions of the technical evaluation are not surprising to the contractor.

To establish a solid negotiation position, the responsibility of the technical engineer is to review and assess the labor hours, the kinds and quantities of material, travel inputs, and other direct costs in a technical evaluation. The DCAA and the DCMA are responsible for the verification of labor rates, overhead rates and material costs in an audit report and price analysis report. The buyer and government price analyst are responsible for the profit and incentive structure for the proposed effort. Together, the government and contractor teams establish a fair and reasonable position to meet the needs of the warfighter and the contractor's return on investment. The ultimate price of the proposed effort is important because the government is the steward of the taxpayer's money. The price of the proposed effort should be fair and reasonable to all parties.

## SUMMARY

The program's technical team must take a contract requirement from cradle to grave, defining the government's requirement, writing the SOW, preparing a technical evaluation for negotiations, assisting in negotiations, and after contract award, implementing the change effort. The responsibility of writing the technical evaluation report is important because it is the key document that assists in the fair and reasonable negotiation of the government's requirement.

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The key elements to the technical analysis are: (a) understanding the contractor's proposal, (b) organization of the technical evaluation by reviewing the SOW and scope of tasks for sufficiency, (c) preparation of the technical evaluation by reviewing the contractor's estimating methodology and rationale, (d) communication through continuous fact-finding to determine the equity and reasonableness of the contractor's estimates, (e) focus on the writing of the technical evaluation to support the negotiations between the parties, and (f) consolidation of all evaluation elements by evaluating the detailed estimates in the contractor's proposal and ensuring there are no disconnects, duplications or inefficiencies.

A recurring problem is the experience of program office personnel selected to perform technical evaluations of the contractor's proposal. New personnel look to senior members of the program office, support contractors, or in shoulder-to-shoulder processes to the

contractor to explain and assist in developing a coherent strategy for the technical assessment. The key to excellence is hiring the right people for the position—in most programs, personnel with less than two years' experience may be asked to evaluate medium- to high-complexity satellite and aircraft procurements with little direct guidance. Programs must (1) give adequate training to junior members and any potential technical evaluator, and (2) support the development of software tools to assist in the evaluation process.

The government is moving towards developing training aids, checklists, and tools needed to support the technical evaluator. At one point, checklists and tools were discarded for total system responsibility by the contractor. The government has now discovered the need for more oversight and the regaining of lost practices. A discipline standard (using software modeling and retrieval tools) needs to be in place for programs to follow and be held accountable when expending tax dollars.

The interim solution to receiving well documented and detailed technical evaluations for sole source proposals is a combination of infusing discipline and detailed understanding of contractor proposals (by training junior personnel) and realigning the priorities of the project officer to maintain focus on completing the best evaluation for a fair and reasonable government position.

The acquisition community must refocus its efforts and direction toward ensuring a synchronized, well-documented, comprehensive, complete, and accurate technical evaluation for sole-source procurements. The above primer on technical evaluations is far from comprehensive, with many more methods and styles available to technical engineers. The basic facts presented here hopefully give a solid foundation, and starting point, for a technical engineer to go forth and accomplish a technical evaluation sufficient for negotiations.

#### ACKNOWLEDGMENT

The author would like to thank Mr. Phil McManus from ESC for his powerful technical evaluation training, which was the impetus for putting pen to paper.

## ENDNOTES

1. Technical Evaluations, presented by SMC/PKOM and sanitized for release.
2. Ibid.



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## REFERENCES

- Aeronautical Systems Center. (2000, September 30). Fact-finding and technical evaluations pamphlet 63-1.
- Air Force Space Command. (n.d.). Technical functional evaluation checklist.
- McManus, Phil. (2000, April). Electronic Systems Command: Technical evaluations. Space Missile Systems Center [SMC] PKXF briefing.
- Space Missile Systems Center. (1999, August 24). Project officer's guide for preparing technical evaluations.
- Space Missile Systems Center. (2001). Meteorological satellite program.
- Space Missile Systems Center. (2001). Military satellite communications project office.
- Space Missile Systems Center (2003). Global positioning satellite technical evaluation training.